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1 September 2004

The International Bureau of WIPO
34 Chemin des Colombettes
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Switzerland

"Amendment of the claims under Article 19(1) (Rule 46)"

Re: International Application No. PCT/JP2004/006991
International Filing Date: 17 May 2004
Applicant: Matsushita Electric Industrial Co., Ltd.
Agent: IKEUCHI SATO & PARTNER PATENT ATTORNEYS
Our Ref.: H2091-01

Dear Sirs:

The Applicant, who received the International Search Report relating to the above-identified International Application transmitted on 22 June 2004, hereby files amendment under Article 19(1) as in the attached sheets.

That is, claims 1, 16 and 18 are amended, claim 15 is canceled and claims 2-14 and 17 are retained unchanged.

The Applicant also files as attached herewith a brief statement explaining the amendment and indicating any impact that amendment therein might have on the description and drawings.

Sincerely yours,

Hiroyuki Ikeuchi

IKEUCHI SATO & PARTNER PATENT ATTORNEYS
Representative Partner
Hiroyuki IKEUCHI

Attachment:
(1) Amendment under Article 19(1) 4 sheets
(2) Brief Statement 1 sheet

CLAIMS

1. (Amended) A ceramic green sheet obtained by forming a ceramic coating containing at least a ceramic raw material powder, a binder, and an organic solvent in a sheet shape, followed by drying,

wherein the binder contains two or more kinds of polyvinyl acetal with different average degrees of polymerization,

polyvinyl acetal with a higher average degree of polymerization contains a relatively large amount of hydroxyl group, and polyvinyl acetal with a lower average degree of polymerization contains a relatively small amount of hydroxyl group, and

the ceramic green sheet has a porosity of 10 to 60 vol%.

2. The ceramic green sheet according to claim 1, wherein a difference in average degree of polymerization between the two or more kinds of polyvinyl acetal with different average degrees of polymerization is not less than 300.

3. The ceramic green sheet according to claim 1, wherein the amount of the hydroxyl group in the polyvinyl acetal with a lower average degree of polymerization is less than 25 mol% of a total amount of functional groups contained in the polyvinyl acetal with a lower degree of polymerization.

4. The ceramic green sheet according to claim 1, wherein the amount of the hydroxyl group in the polyvinyl acetal with a higher average degree of polymerization is not less than 25 mol% of a total amount of functional groups contained in the polyvinyl acetal with a higher degree of polymerization.

5. The ceramic green sheet according to claim 1, wherein the polyvinyl acetal with a lower average degree of polymerization has an average degree of polymerization of not more than 600.

6. The ceramic green sheet according to claim 1, wherein the polyvinyl acetal with a higher average degree of polymerization has an average degree of polymerization of not less than 900.

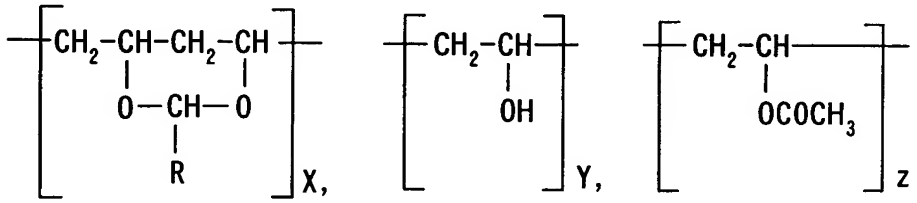
7. The ceramic green sheet according to claim 1, wherein an amount of the

polyvinyl acetal with a lower average degree of polymerization is in a range of 10 to 90 wt% of a total amount of the binder included in the ceramic green sheet, and an amount of the polyvinyl acetal with a higher average degree of polymerization is in a range of 90 to 10 wt% of the total amount of the binder included in the ceramic green sheet.

8. The ceramic green sheet according to claim 1, wherein of the two or more kinds of polyvinyl acetal with different average degrees of polymerization, the polyvinyl acetal with a higher average degree of polymerization has a relatively high glass transition temperature, and the polyvinyl acetal with a lower average degree of polymerization has a relatively low glass transition temperature.

9. The ceramic green sheet according to claim 1, wherein a difference in glass transition temperature between the polyvinyl acetal with a higher average degree of polymerization and the polyvinyl acetal with a lower average degree of polymerization of the two or more kinds of polyvinyl acetal with different average degrees of polymerization is not less than 5°C.

10. The ceramic green sheet according to claim 1, wherein each of the two or more kinds of polyvinyl acetal is a random polymer represented by the following Formula 1 (where $0 < X < 100$; $0 < Y < 100$; $0 < Z < 100$; $X + Y + Z = 100$ mol%; R is an alkyl group having a carbon number of 1 to 6).



(Formula 1)

11. The ceramic green sheet according to claim 10, wherein in the Formula 1, R of an acetal group in the polyvinyl acetal with a lower degree of polymerization is C_3H_7.

12. The ceramic green sheet according to claim 10, wherein in the Formula 1, R of an acetal group in the polyvinyl acetal with a higher degree of polymerization is CH_3 or C_3H_7.

13. The ceramic green sheet according to claim 1, wherein a content of acetyl group in the polyvinyl acetal with a lower degree of polymerization is not less than 3 mol% of a total amount of functional groups contained in the polyvinyl acetal with a lower degree of polymerization.

14. The ceramic green sheet according to claim 1, wherein a content of acetyl group in the polyvinyl acetal with a higher degree of polymerization is not less than 3 mol% of a total amount of functional groups contained in the polyvinyl acetal with a higher degree of polymerization.

15. (Cancelled)

16. (Amended) A laminated ceramic article obtained by producing a ceramic coating containing at least a ceramic raw material powder, a binder, and an organic solvent, forming the obtained ceramic coating in a sheet shape, followed by drying, whereby a ceramic green sheet is produced, and producing a laminate using the ceramic green sheet and an inner electrode sheet or producing a laminate using the ceramic green sheet on which an inner electrode is formed, followed by binder-removing and firing,

wherein the ceramic green sheet is obtained by forming a ceramic coating containing at least a ceramic raw material powder, a binder, and an organic solvent in a sheet shape, followed by drying,

the binder contains two or more kinds of polyvinyl acetal with different average degrees of polymerization,

polyvinyl acetal with a higher average degree of polymerization contains a relatively large amount of hydroxyl group, and polyvinyl acetal with a lower average degree of polymerization contains a relatively small amount of hydroxyl group, and

the ceramic green sheet has a porosity of 10 to 60 vol%.

17. The laminated ceramic article according to claim 16, wherein the laminated ceramic article is a laminated ceramic capacitor.

18. (Amended) A method for manufacturing a laminated ceramic article comprising at least: producing a ceramic coating containing at least a ceramic raw material powder, a binder, and an organic solvent; forming the

obtained ceramic coating in a sheet shape, followed by drying, whereby a ceramic green sheet is produced; producing a laminate using the ceramic green sheet and an inner electrode sheet or producing a laminate using the ceramic green sheet on which an inner electrode is formed; and subjecting the laminate to binder-removing and firing,

wherein the ceramic green sheet is obtained by forming a ceramic coating containing at least a ceramic raw material powder, a binder, and an organic solvent in a sheet shape, followed by drying,

the binder contains two or more kinds of polyvinyl acetal with different average degrees of polymerization,

polyvinyl acetal with a higher average degree of polymerization contains a relatively large amount of hydroxyl group, and polyvinyl acetal with a lower average degree of polymerization contains a relatively small amount of hydroxyl group, and

the ceramic green sheet has a porosity of 10 to 60 vol%.

Explanations based on the Specification of PCT Article 19(1)
(PCT Rule 46.4)

1. Explanations of the Amendments

Claims 1, 16, and 18 have been amended so as to incorporate the limitation of original claim 15 therein. Original claim 15 has been cancelled.

2. Comparison between the Invention of the Present Application and that of the Cited Documents

Even when all the cited documents are combined, it is neither described nor suggested that "the ceramic green sheet has a porosity of 10 to 60 vol%" according to amended claims 1, 16, and 18 of the present application. According to this difference, the invention of the present application can achieve an operational advantage that "When the porosity is less than 10 vol%, the thickness of the inner electrode cannot be absorbed, and accordingly the adhesion between the ceramic green sheets becomes insufficient, resulting in a tendency of or the like to occur. On the other hand, when the porosity is more than 60 vol%, the strength of the green sheet itself tends to decrease." (page 7, lines 10 to 14 of the Japanese specification) (page 6, lines 27 to 32 of the English translation) and "the strength of the ceramic green sheet is increased without significantly raising the viscosity of a ceramic coating, and a deterioration in the adhesion between the ceramic green sheets is suppressed, whereby the ceramic green sheet that is capable of being laminated with high accuracy can be provided." (page 7, lines 22 to 25 of the Japanese specification) (page 7, lines 6 to 10 of the English translation).

3. Summary

As described above, we believe that the invention of the present application has novelty and inventive steps over the cited documents.